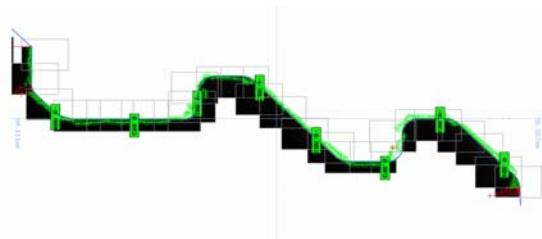
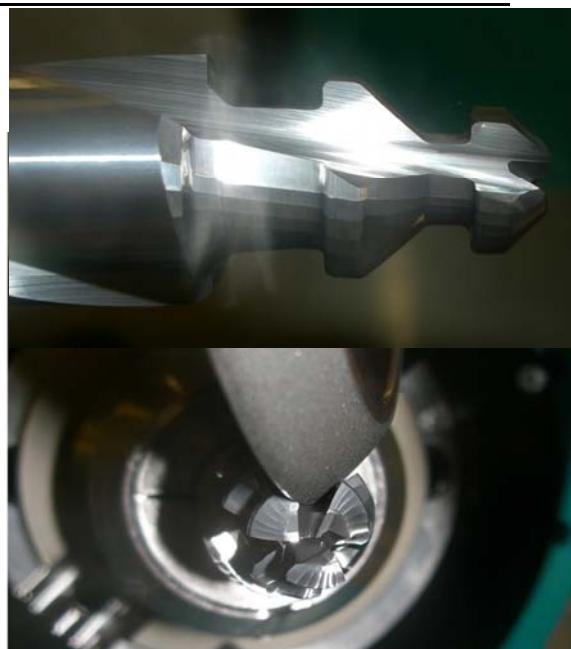


Firtree Cutter Ø20 Z3

A02-041

In order to reach cutting capabilities of the firtree cutter at the deepest parts of the profile the wheel shape can be designed according to inverse calculations. Grinding with a standard wheel would lead to negative rakes in the bottom parts. Profile finishing is executed in 5 to 7 facettes distributed on a width of 1.5 - 2 mm, diameter dependend, as being an approximation to radial relief.



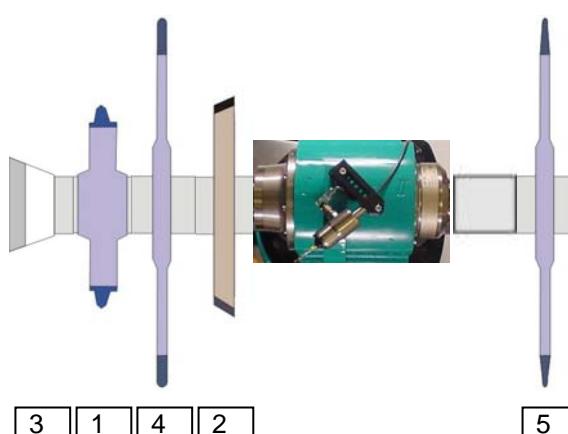
1. Cycletime for Production

| | | | | | | | | | |
|--|-----------|---------|---------|---------|-------|-------|-----------|----------|---------|
| Workpiece: Diameter 20 mm, Z 3, Length of cutting edge 35 mm, Helix angle 10° Material HSS | | | | | | | | | |
| Operations | Probe | Flute 1 | Flute 2 | Gashing | End 2 | End 1 | Prf Rough | Prf Pgrd | Prf fin |
| Feed [mm/Min] | 2000 | 35 | 100 | 80 | 60 | 90 | 70 | 55 | 120 |
| Power [kW] | | 3 | 2 | 2 | 1 | 1 | 3 | 2 | 1 |
| Cutting feed [m/s] | | 20 | 20 | 22 | 24 | 24 | 22 | 22 | 24 |
| Used wheels | | 1 | 1 | 2 | 3 | 3 | 4 | 5 | 5 |
| Grinding time [s] | 6 | 210 | 96 | 78 | 38 | 30 | 1275 | 851 | 584 |
| Total cycle time | 52 Min 46 | | | | | | | | |

The cycle times are indicative. Material to be ground, grinding wheels, coolants can influence the cycle times considerably.

2. Used Grinding Wheels

| | |
|---|-----------------|
| 1 | DXF Ø125 B126 |
| 2 | 1V1 Ø125 B126 |
| 3 | 11V9 Ø75 B106 |
| 4 | 14F1 Ø200 B126 |
| 5 | 14EE1 Ø200 B126 |



3. Machine and Software Requirements

Machines: 5 axes CNC grinders : NORMA CFG

Coolant: Synthetic Oil, pressure 6 bar

Control: Fanuc 160i

Software: Quinto 4

Accessories:

Responsible engineer: OP. 20.8.09

www.schneeberger.ch

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